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(54) **ONE PIECE CO-FORMED EXTERIOR HARD SHELL CASE WITH AN ELASTOMERIC LINER FOR MOBILE ELECTRONIC DEVICES**

USPC 455/575.8, 575.1, 575.3; 379/451, 447
See application file for complete search history.

(71) Applicant: **Speculative Product Design, LLC**,
Mountain View, CA (US)
(72) Inventors: **Bryan Lee Hynecek**, Redwood City, CA
(US); **Jarret Weis**, San Francisco, CA
(US); **Stephen Reiger Myers**, Redwood
City, CA (US); **David John Law**,
Seattle, WA (US)

(73) Assignee: **Samsonite IP Holdings S.à.r.l.**,
Luxembourg (LU)

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H04M 1/00 (2006.01)
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(56) **References Cited**

U.S. PATENT DOCUMENTS

5,265,720 A 11/1993 Meilliconi
5,816,459 A 10/1998 Armistead

(Continued)

FOREIGN PATENT DOCUMENTS

CN 1306700 8/2011
GB 2463712 3/2010

(Continued)

OTHER PUBLICATIONS

Amended Petition for Inter Partes Review No. IPR2013-00197—
Review of US Patent No. 8,204,561.

(Continued)

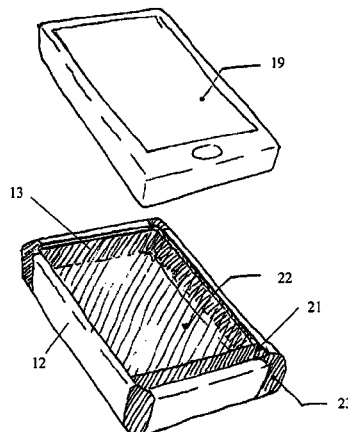
Primary Examiner — Kiet Doan

(74) *Attorney, Agent, or Firm* — Frommer Lawrence &
Haug LLP

(57) **ABSTRACT**

A one-piece co-formed exterior hard shell case with an elastomeric liner formed on the interior of the exterior hard shell for mobile electronic devices. This hard protective exterior shell allows the device maximum protection from impacts with sharp objects while the interior elastomeric portion that provides shock protection for the device from impacts. The exterior hard shell part is formed to fit the device closely with a small offset from the devices surface. The exterior hard shell raps around the edges of the device. To allow the shell to be able to be mounted on the device the corners of the hard shell are cut open. This allows each sidewall to flex away when a device is inserted and snap back once it is in place. The elastomeric material fills in the gaps created at the corners of the exterior hard shell to allow flex for mounting.

12 Claims, 6 Drawing Sheets



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- 2010/0116387 A1 5/2010 Channey et al.
 2010/0144411 A1 6/2010 Pettingill
 2010/0147715 A1 6/2010 Miglioli et al.
 2010/0207001 A1 8/2010 Smith et al.
 2010/0243515 A1 9/2010 Mish et al.
 2011/0055447 A1 3/2011 Costa

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FOREIGN PATENT DOCUMENTS

KR 20-0407284 1/2006
 KR 10-2008-0050555 6/2008
 WO WO 02/11161 2/2002
 WO WO 2007/125254 10/2007
 WO WO 2008/032891 3/2008
 WO WO 2009/018345 2/2009

- (56) **References Cited**

U.S. PATENT DOCUMENTS

5,908,114 A 6/1999 Althouse et al.
 6,079,563 A 6/2000 Katchmazenski
 6,109,434 A 8/2000 Howard, Jr.
 6,179,122 B1 1/2001 Moncrief et al.
 6,273,252 B1 8/2001 Mitchell
 6,471,056 B1 10/2002 Tzeng
 6,614,722 B2 9/2003 Polany et al.
 6,665,174 B1 12/2003 Derr et al.
 6,719,381 B2 4/2004 Cleereman et al.
 6,785,566 B1 8/2004 Irizarry
 6,914,774 B1 7/2005 Albertini et al.
 6,926,856 B2 8/2005 Hus et al.
 6,980,777 B2 12/2005 Shepherd et al.
 6,981,589 B2 1/2006 Sanders, Jr.
 7,248,904 B2 7/2007 Gartrell et al.
 7,343,184 B2 * 3/2008 Rostami 455/575.8
 7,495,895 B2 2/2009 Carnevali
 D593,319 S 6/2009 Richardson et al.
 D593,746 S 6/2009 Richardson et al.
 7,551,949 B2 6/2009 Schworm
 7,609,512 B2 10/2009 Richardson et al.
 7,623,898 B2 11/2009 Holmberg
 7,647,082 B2 1/2010 Holmberg
 D617,784 S 6/2010 Richardson et al.
 7,907,394 B2 3/2011 Richardson et al.
 7,933,122 B2 4/2011 Richardson et al.
 8,073,131 B2 12/2011 Bodkin et al.
 8,204,561 B2 6/2012 Mongan et al.
 8,245,842 B2 8/2012 Bau
 2001/0002003 A1 5/2001 Kuzdak et al.
 2003/0036362 A1 2/2003 Buesseler et al.
 2003/0068035 A1 4/2003 Pirila et al.
 2003/0070959 A1 4/2003 Maresh et al.
 2003/0083094 A1 5/2003 Hsu et al.
 2003/0103624 A1 6/2003 Hu
 2003/0111366 A1 6/2003 Enners
 2004/0014506 A1 1/2004 Kempainen
 2005/0054395 A1 * 3/2005 Arbisi et al. 455/575.3
 2005/0139498 A1 6/2005 Goros
 2005/0153757 A1 7/2005 Maenpaa et al.
 2005/0174727 A1 8/2005 Thomas et al.
 2005/0279661 A1 12/2005 Hodges
 2006/0040550 A1 2/2006 Slauson
 2006/0164800 A1 7/2006 McEwan et al.
 2006/0289030 A1 12/2006 Pho
 2007/0060224 A1 3/2007 Liu
 2007/0139873 A1 * 6/2007 Thomas et al. 361/681
 2007/0184781 A1 8/2007 Huskinson
 2007/0225031 A1 9/2007 Bodkin et al.
 2008/0032758 A1 2/2008 Rostami
 2008/0039161 A1 2/2008 Chan
 2008/0096620 A1 4/2008 Lee et al.
 2008/0227507 A1 9/2008 Joo
 2008/0242384 A1 10/2008 Hsu et al.
 2009/0017883 A1 1/2009 Lin
 2009/0080153 A1 3/2009 Richardson et al.
 2009/0111543 A1 4/2009 Tai et al.
 2009/0194444 A1 8/2009 Jones
 2010/0006314 A1 1/2010 Wilson, II et al.
 2010/0078343 A1 4/2010 Hoellwarth et al.
 2010/0096284 A1 4/2010 Bau
 2010/0104814 A1 4/2010 Richardson et al.

OTHER PUBLICATIONS

Complaint for Patent Infringement, Demand for Jury Trial, Including Exhibit A, Northern District of California Case No. CV12-04997, Dated Sep. 25, 2012.

Complaint for Patent Infringement, Demand for Jury Trial, Including Exhibit A, Northern District of California Case No. CV12-04995, Dated Sep. 25, 2012.

Fellowes Answer to First Amended Complaint, Including Exhibits A-B, Northern District of California Case No. 3:12-CV-04998EMC, Dated Jan. 7, 2013.

Fellowes Answer to First Amended Complaint and Notice of Investigation, Public version, Including Exhibits A-B, Inv. No. 337-TA-861, Dated Dec. 4, 2012.

First Amended Complaint for Patent Infringement, North District of California Case No. 3:12-cv-04998-EMC, Dated Dec. 14, 2012.

Ground Rule 8-3 Joint Claim Construction Chart, ITC Case No. 2917, Dated Apr. 12, 2013.

Inter Partes Review No. IPR2013-00197—Review of US Patent No. 8,204,561 Exhibit 1007.

Inter Partes Review No. IPR2013-00197—Review of US Patent No. 8,204,561 Exhibit 1009.

Inter Partes Review No. IPR2013-00197—Review of US Patent No. 8,204,561 Exhibit 1010.

Inter Partes Review No. IPR2013-00197—Review of US Patent No. 8,204,561 Exhibit 1011.

Inter Partes Review No. IPR2013-00197—Review of US Patent No. 8,204,561 Exhibit 1012.

Petition for Inter Partes Review of related Patent No. 8,204,561, Trial No. IPR2013-00197, Dated Apr. 2, 2013.

Public ITC Complaint, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 01, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 02, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 03, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 04, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 05, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 06, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 07, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 08, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 09, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 10, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 11, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 12, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 13, Case No. 2917, Dated Sep. 26, 2012.

(56)

References Cited**OTHER PUBLICATIONS**

Public ITC Complaint Exhibit 14, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 15, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 16, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 17, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 18, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 19, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 20, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 21, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 22, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 23, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 24, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 25, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 26, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 27, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 28, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 29, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 30, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 31, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 32, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 33, Case No. 2917, Dated Sep. 26, 2012.

Public ITC Complaint Exhibit 34, Case No. 2917, Dated Sep. 26, 2012.

Hon. Phyllis J. Hamilton; *Speculative Product Design, LLC v. JWIN Electronics Corp.*; U.S. District Court, California Northern District (Oakland); Civil Docket for Case #: 4:12-cv-04995-PJH; Filed Sep. 25, 2012.

Hon. Richard Seeborg; *Speculative Product Design, LLC v. Superior Communications, Inc.*; U.S. District Court, California Northern District (San Francisco); Civil Docket for Case #: 3:12-cv-04997-RS; Filed Sep. 25, 2012.

Hon. William H. Orrick; *Speculative Product Design, LLC, V. Bodyglove International, LLC*; U.S. District Court, California Northern District (San Francisco); Civil Docket for Case #: 3:12-cv-04998-WHO; Filed Sep. 25, 2012.

CandyShell Case for iPhone 3G product description, downloaded from the internet on Oct. 17, 2011 from <http://web.archive.org/web/20081218035309/http://www.speckproducts.com/products/candyshell/iphone-3g/162>.

CapsuleNeo™ for iPhone 3G, downloaded from the internet on Oct. 17, 2011 from <http://web.archive.org/web/20081222050045/http://www.switcheasy.com/products/Neo/Neo.php>.

CapsuleRebel™ for iPhone 3G, downloaded from the internet on Oct. 17, 2011 from <http://web.archive.org/web/20081225012114/http://www.switcheasy.com/products/Rebel/Rebel.php>.

Goyal et al., Shock Protection of Portable Electronic Products: Shock Response Spectrum, Damage Boundary Approach, and Beyond, Shock and Vibration, 1997, pp. 169-191, vol. 4, No. 3.

Goyal et al., Designing Best-in-Class Impact-Tolerant Cellular Phones and Other Portable Products, Bell Labs Technical Journal, 1998, pp. 159-174, vol. 3, No. 3.

Goyal et al., Improving Impact Tolerance of Portable Electronic Products: Case Study of Cellular Phones, Experimental Mechanics, 1999, pp. 43-52, vol. 39, No. 1.

Goyal et al., Role of Shock Response Spectrum in Electronic Product Suspension Design, The International Journal of Microcircuits and Electronic Packaging, 2000, pp. 182-190, vol. 23, No. 2.

Horowitz, Speck CandyShell for iPhone 3G, 2009, downloaded from the internet on Oct. 16, 2011 from <http://web.archive.org/web/20090119211235/http://ilounge.com/index.php/reviews/entry/speck-candyshell-for-iphone-3g>.

International Search Report dated Mar. 31, 2010 in related PCT Application No. PCT/US2010/022330 filed Jan. 28, 2010.

YouTube Screenshot of iPhone 3G Case Review: iFrogz Luxe, downloaded from the internet from <http://www.youtube.com/watch?v=cENH2uYzqLk>, Uploaded by phonedog on Jan. 26, 2009.

Zhang et al., iPhone Case Review Roundup: Vaja, Sena, OtterBox, DLO and Boxwave, 2007 and 2008, downloaded from the internet on Oct. 17, 2011 from <http://www.mobiletechreview.com/iPod/iPhone-cases-review.htm>.

U.S. International Trade Commission (Washington, D.C.); Filed Jul. 8, 2013; in the matter of Certain Cases for Portable Electronic Devices; Inv. No. 337-TA-861, Inv. No. 337-TA-867(Consolidated); Order No. 13 Construing Terms of the Asserted Patent.

U.S. International Trade Commission (Washington, D.C.); Inv. No. 337-TA-867 Docket.

U.S. International Trade Commission (Washington, D.C.); Inv. No. 338-TA-861 Docket.

U.S. Appl. No. 61/133,365, filed Jun. 27, 2008.

U.S. Appl. No. 61/188,084, filed Aug. 5, 2008.

Modmyi.com Website, May 2, 2008.

Singapore Written Opinion dated Apr. 17, 2012 in related Application No. 201105666-0 filed Jan. 28, 2010.

Scosche Industries IPC4 case product description, page captured May 22, 2007, <https://web.archive.org/web/20070522085222/http://www.scosche.com/products/sfid1/210/sfid2/212/sfid3/276/productID/1468>.

Magazine ad for Scosche iPhone and iPod “The new cases on the block”; Mac Life (Mac Addict) Feb. 1, 2008.

Article Review on “Scosche debuts iPod cases, transmitter”—updated on Jan. 14, 2008; <http://macnn.com/articles/08/01/2014/scosche.ipod/>.

Article Review “MWSF: Scosche Industries showcase new products at Macworld” <http://www.macnews.com/cotent/mwsf-scosche-industries-showcase-new-products-macworld>.

Magazine ad for Scosche iPhone and iPod “The new case on the block” in the Mac Life Magazine of Dec. 2007 No. 11.

Contour Fusion iPhone 3G case product description, page captured Aug. 8, 2008, <https://web.archive.org/web/20080808105315/http://www.contourcase.com/fusion/fusioniphone3g>.

Contour Design—Fusion Case—iPhone 3S/3GS uploaded on Sep. 23, 2009; <https://www.youtube.com/watch?v=2iSFndU794&t=80>.

Contour Fusion Review for iPhone 3G (part) uploaded on Aug. 23, 2008; https://www.youtube.com/watch?v=4wHAnpv_13Q.

Contour Showcase for iPhone product description for iPhone page captured Oct. 12, 2007, <https://web.archive.org/web/20071012222351/http://www.contourcase.com/showcase/showcaseiphone/#>.

Photographs of Contour Showcase.

Speculative Product Design, LLC v. Otter Products, LLC; U.S. District Court California Northern District (San Jose); Hon. Edward J. Davila; Civil Docket for Case #: 5:14-cv-03749-EJD; Filed Aug. 18, 2014.

* cited by examiner

10

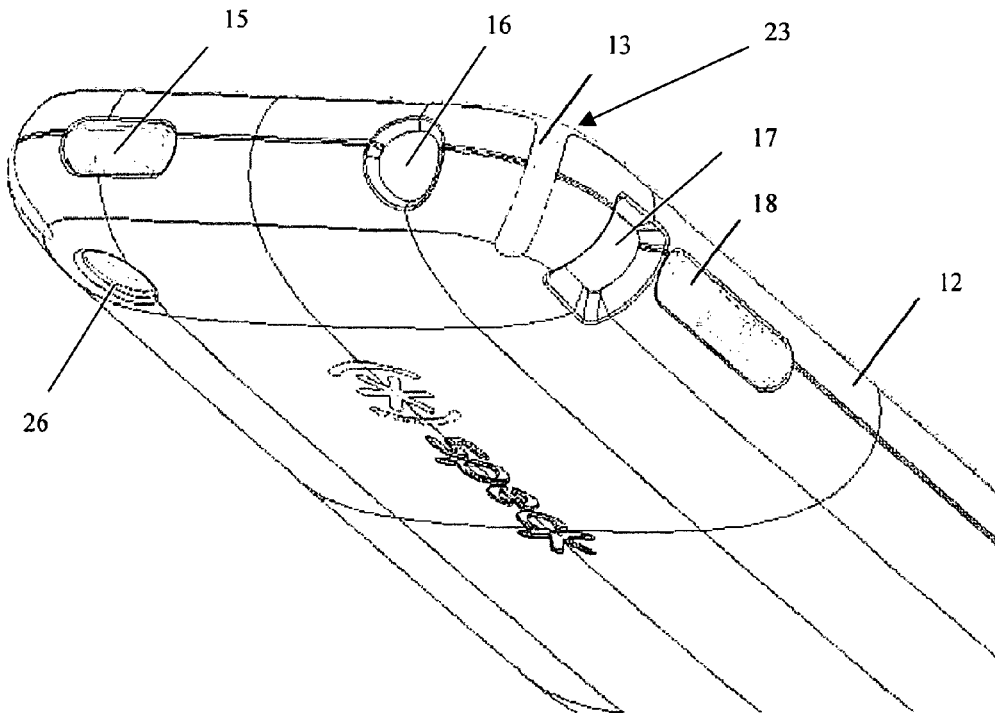


Fig. 1

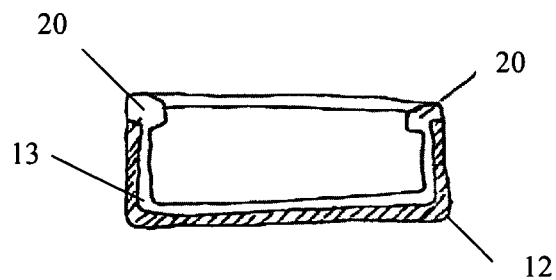


Fig. 2a

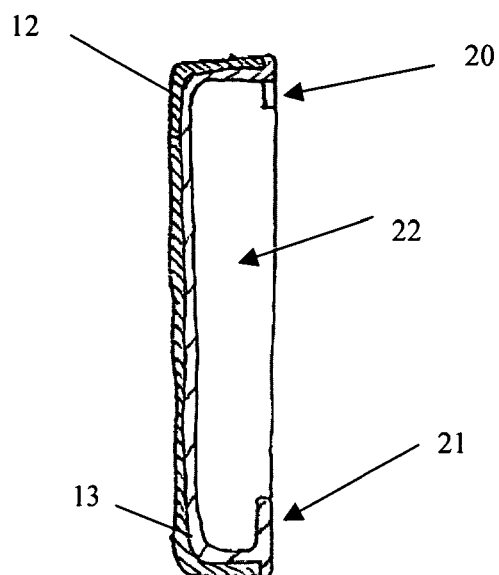


Fig. 2b

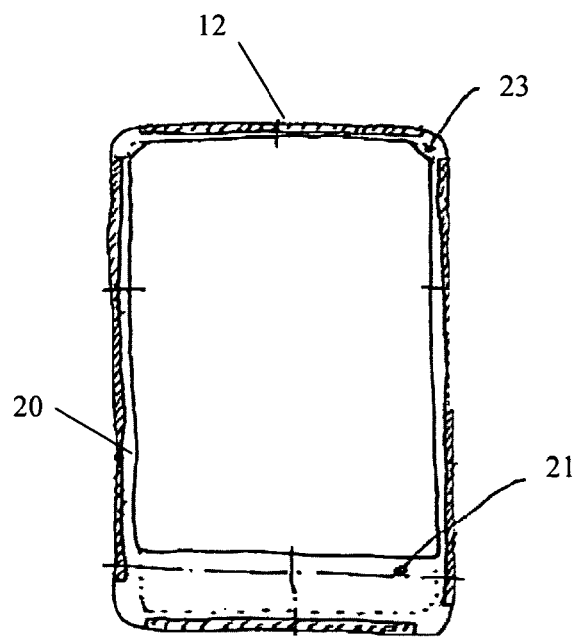


Fig. 3

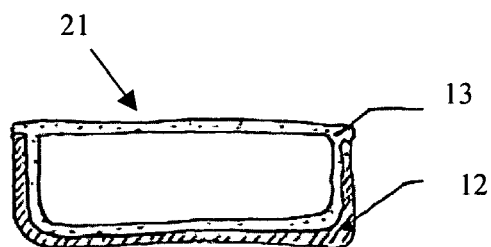


Fig. 4

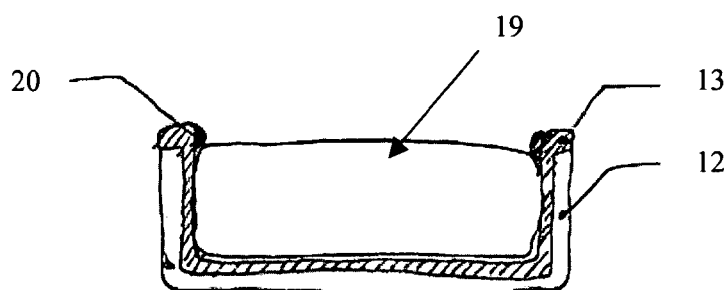


Fig. 6

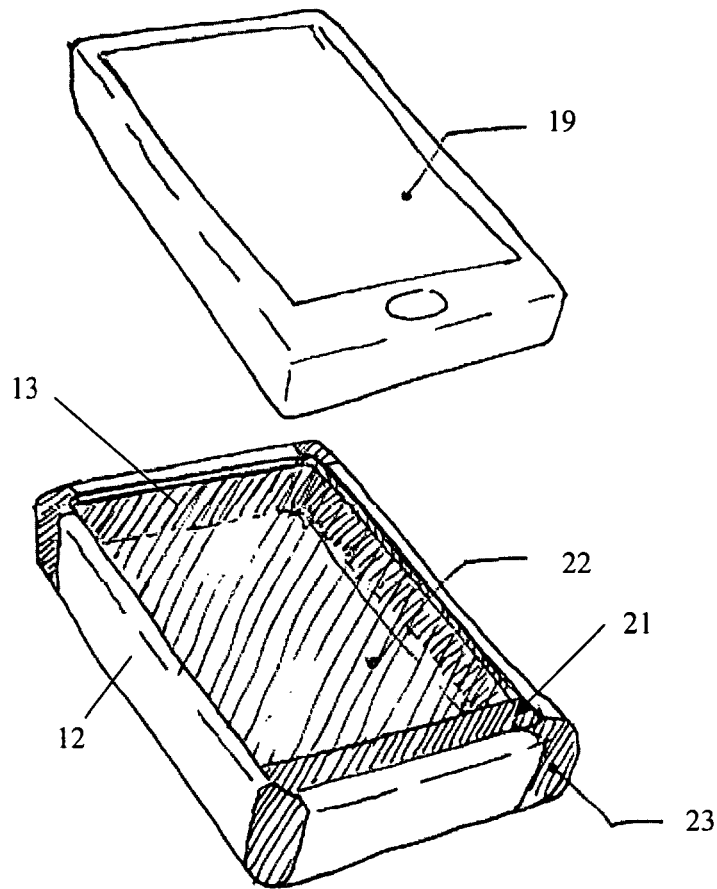


Fig. 5

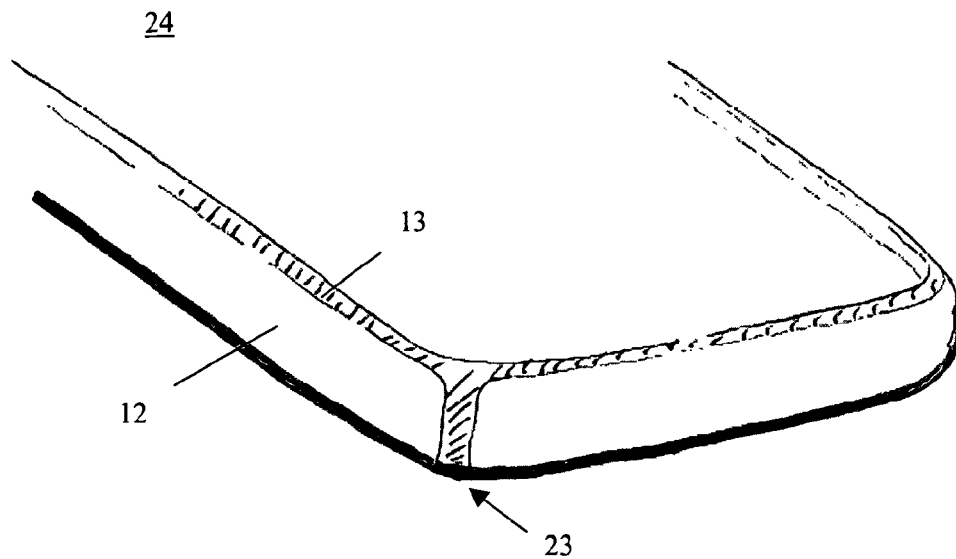


Fig. 7a

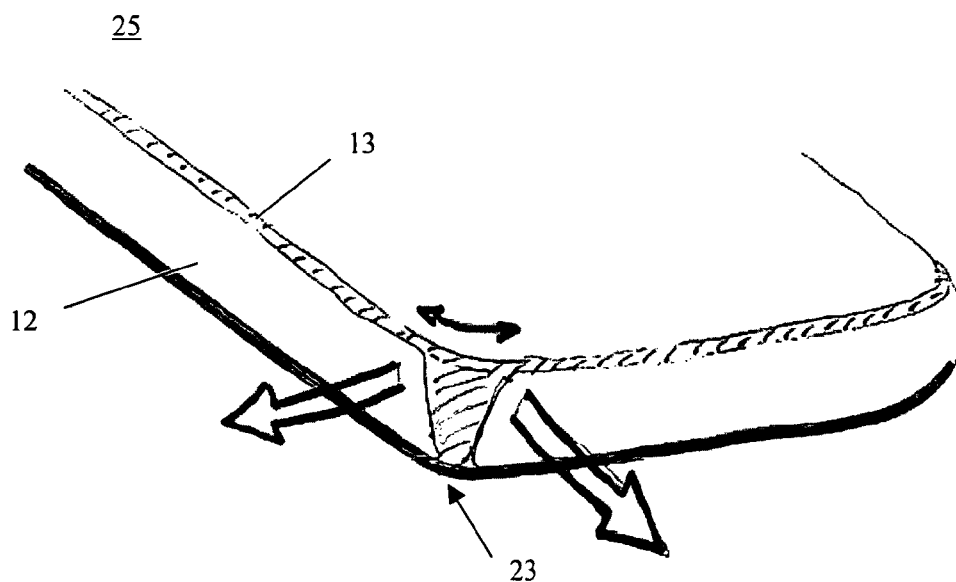


Fig. 7b

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ONE PIECE CO-FORMED EXTERIOR HARD SHELL CASE WITH AN ELASTOMERIC LINER FOR MOBILE ELECTRONIC DEVICES

FEDERALLY SPONSORED RESEARCH

Not Applicable

SEQUENCE LISTING OR PROGRAM

Not Applicable

CROSS REFERENCE TO RELATED APPLICATIONS

Not Applicable

TECHNICAL FIELD OF THE INVENTION

The present invention relates generally to handheld mobile electronic devices, such as a personal digital assistant, cellular telephone, lab top computers or portable digital media player. More specifically the present invention relates to a multiple-component protective case for mobile electronic devices.

BACKGROUND OF THE INVENTION

There are many cases for handheld electronic devices. They fall into four main categories: Elastomeric/Rubber skins, hard plastic shells, cut and sew materials and combinations of these. In general the elastomeric cases are a single skin which, because of the flexible nature of the material, can easily be stretched over the device and then once installed conform closely to the shape of the device. The rubbery material can provide very good shock resistance. The downside of these types of cases is that the elastomeric material has a high surface friction coefficient. This makes this type of case difficult to place in and remove from pockets and other tight places. What is needed is a device that offers the very good shock resistance of an elastomeric case without the high surface friction coefficient making it more convenience for use.

Hard plastic shells normally are manufactured as more than one piece to allow the device to slide into the case before being closed in with a secondary piece. Additionally they will often have a liner of elastomeric material, which helps to cushion the device. This can be co-molded, permanently attached or floating with the assembly. Cut and Sew cases are normally made from flat stock material, which is cut into patterns and then sewn into a shape that the device can slide into. The device is then held in place, by friction or a strap of some form. The downside to these devices is that it can be difficult to attached a device to a rigid case, or where a case has a secondary piece for securing a device, it can add bulk to the combination of the device and case, making it impractical. Additionally, the manufacture of cases which are required to be cut and sewn together greatly increases cost. What is needed is a case that combines both hard shell cases and elastomeric materials that is easy to produce and requires minimal material in its production.

SUMMARY OF THE INVENTION

The present invention is an improvement over the existing cases because it combines the best features of both hard cases

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and the elastomeric cases while being only a single part, which is particularly useful from a consumer viewpoint. The present invention provides a hard protective exterior shell. This hard protective exterior shell allows the device maximum protection from impacts with sharp objects. The hard protective exterior shell mimics the finish of existing phones, MP3/4 players, and other mobile electronic devices. Many users like the feel of the original phone and would like to maintain that feel but still want protection for their device. The hard protective exterior shell of the present invention has a low coefficient of friction. This allows the device to easily be slipped in and out of pockets easily without becoming attached or without great resistance to clothing materials. A major complaint from current elastomeric case users.

The case taught by the present invention has an interior elastomeric portion that provides shock protection for the device from dropping, falls, or other impacts. The interior elastomeric portion also ensures the device and the case fit together with no gaps as the case is a single piece assembly. The case has a very solid connection to the phone and feels extremely high quality and lightweight.

What makes this case different is the geometry and manufacturing of the case. The exterior hard shell part is formed to fit the device closely with a small offset from the devices surface. The exterior hard shell raps around the edges of the device it is formed for. To allow the shell to be able to be mounted on the device the corners of the hard shell are cut open. This allows each sidewall to flex away when a device is inserted and snap back once it is in place. The unique aspect of this case is that the elastomeric material is formed in addition to the exterior hard shell on the interior of the exterior hard shell. The elastomeric material fills in the gaps created at the corners of the exterior hard shell to allow the hard shell to flex for mounting. The elastomeric material is provided in this location because it has much greater inherent flexibility than the plastic or metal of the exterior hard shell and it stretches sufficiently to allow the sidewalls of the exterior hard shell to still flex away on mounting. This creates a one-piece case that wraps around a phone or other mobile electronic device even on corners and prevents dirt and fluids from entering wherever possible. The elastomeric liner also can be formed over the buttons on the phone wherein a user simply presses the elastomeric liner corresponding to the portion of the mobile electronic device input that is desired.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated herein and form a part of the specification, illustrate the present invention and, together with the description, further serve to explain the principles of the invention and to enable a person skilled in the pertinent art to make and use the invention.

FIG. 1 is a perspective view of a handheld device protective case depicting the external hard shell layer with cut corners and inner elastomeric layer of the protective carrying case where it fills in the cut corners of the external hard shell layer;

FIGS. 2a and 2b are sectional views of the protective case of the present invention showing the detent created by the inner elastomeric layer for securing a device in the case;

FIG. 3 is a top orthogonal view of a handheld device protective case depicting the external hard shell layer with cut corners and inner elastomeric layer of the protective carrying case where it fills in the cut corners of the external hard shell layer and an additional large elastomeric overhand for securing a device;

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FIG. 4 is sectional view of the protective case of the present invention showing the large elastomeric overhand for securing a device;

FIG. 5 is a perspective view of the protective case of the present invention before a device is secured therein;

FIG. 6 is a perspective view of the protective case attached to a sample device showing the detent created by the inner elastomeric layer for securing a device in the case; and

FIGS. 7a and 7b are perspective views of the present invention depicting the external hard shell layer with cut corners and inner elastomeric layer of the protective carrying case is a resting, securing position and in an expanded, device insertion position.

DETAILED DESCRIPTION OF THE INVENTION

In the following detailed description of the invention of exemplary embodiments of the invention, reference is made to the accompanying drawings (where like numbers represent like elements), which form a part hereof, and in which is shown by way of illustration specific exemplary embodiments in which the invention may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, but other embodiments may be utilized and logical, mechanical, electrical, and other changes may be made without departing from the scope of the present invention. The following detailed description is therefore, not to be taken in a limiting sense, and the scope of the present invention is defined only by the appended claims.

The invention will now be described with reference to FIG. 1, which is a perspective view of the protective case 10 depicting the outer layer of the protective case 11, comprising two separate layers, an first external hard shell layer 12 and a second interior elastomeric layer 13. The first external hard shell layer 12 and a second interior elastomeric layer 13 are combined to independently attach to a handheld device 19 and incorporate at least one viewing window 14, input/output access ports 15, 16, and 17, and molded elastomeric covers over device buttons, accessible through holes in the hard shell 18 and 26. This hard protective exterior shell 12 allows the device maximum protection from impacts with sharp objects. The external hard shell layer 12 mimics the finish of existing phones, MP3/4 players, and other mobile electronic devices. Many users like the feel of the original phone and would like to maintain that feel but still want protection for their device 19. The external hard shell layer 12 of the present invention has a low coefficient of friction. This allows the device to easily be slipped in and out of pockets easily without becoming attached or without great resistance to clothing materials.

With further reference to FIG. 1, the external hard shell layer 12 is attached to the second interior elastomeric layer 13. The external hard shell layer 12 and the interior elastomeric layer 13 may be attached in several ways, such as glue, chemical bonding, heating, heat treated chemicals or any other means known in the art which permanently attach the external hard shell layer 12 to the interior elastomeric layer 13. The interior elastomeric portion 13 provides shock protection for the device from dropping, falls, or other impacts. The interior elastomeric portion 13 also ensures the device 19 and the protective case 10 fit together with no gaps as the protective case 10 is a single piece assembly. The protective case 10 has a very solid connection to a device 19 and feels extremely high quality and lightweight.

Depending on manufacturing methods other materials made be used to replace the hard plastic used by the external hard shell layer 12 in a preferred embodiment of the present invention. For example, if it was desired to make a metal/

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elastomeric combo for the protective case 10 without overhangs in the hard material, in this example metal, a simple bending process could be considered for the metal manufacturing. An over molded interior elastomeric layer 13 would provide the undercuts to secure a device. The metal or hard material would then simply provide a framework for the softer material interior layer and also provide the elastic stiffness to allow the device to be held in the opening. The undercut would be formed in the elastomeric material but the flexing to allow a device to be inserted into the protective case would come from the harder material, and again, cutting away the corners of the case allows the sides to easily flex.

FIGS. 2a and 6 are sectional views of the protective case 10 of the present invention showing the detent 20 created by the inner elastomeric layer 13 for securing a device 19 in the case. The protective case 10 is fitted to clasp onto a device 19, and incorporates a detent 20 to ensure a snug and secure fit.

In an alternative embodiment as shown in FIGS. 2b and 4, an additional large elastomeric overhang 21 for securing a device 19 may be included in the protective case 10. This illustrates a possible alternative embodiment where rather than having an undercut in the external hard shell layer 13 and its corresponding sides of the protective case 10, the inner elastomeric layer 13 forms features that would secure the protective case to a device 19. These features could be detents 20 as described along the side or top and bottom of the external hard shell layer 12 or it could be a large area like illustrated in FIGS. 2b and 4 where an additional large elastomeric overhang 21 for securing a device 19 may be included in the protective case 10 so that a device would be slipped under and secured thereby with some form of undercut on the opposite end whether molded into the external hard shell layer 12 or the inner elastomeric layer 13.

As shown in FIGS. 3 and 5, the external hard shell layer 12 defines a fitted cavity 22 fitted to clasp onto a device 19 and incorporates a detent 20 to ensure a snug and secure fit. The handheld device 19 protective case depicts the external hard shell layer 12 with cut corners 23 and inner elastomeric layer 13 of the protective carrying case where the inner elastomeric layer 13 fills in the cut corners 23 of the external hard shell layer 12.

What makes this case different is the geometry and manufacturing of the case. The external hard shell layer 12 is formed to fit a device 19 closely with a small offset from the device's surface. The external hard shell layer 12 raps around the edges of a device 19 it is formed for. To allow the external hard shell layer 12 to be able to be mounted on a device 19 the corners 23 of the external hard shell layer 12 are cut open. This allows each sidewall of the external hard shell layer 12 to flex away when a device 19 is inserted and snap back once it is in place. The unique aspect of the protective case 10 is that an inner elastomeric layer 13 is formed in addition to the external hard shell layer 12 on the interior of the external hard shell layer 12. The inner elastomeric layer 13 fills in the gaps created at the corners 23 of the external hard shell layer 12 to allow the external hard shell layer 12 to flex during mounting as shown in FIGS. 7a and 7b.

The inner elastomeric layer 13 is provided in this location because it has much greater inherent flexibility than the plastic or metal of the external hard shell layer 12 and it stretches sufficiently to allow the sidewalls of the external hard shell layer 12 to still flex away on mounting as shown in FIGS. 7a and 7b. This creates a one-piece protective case 10 that wraps around a device even on corners and prevents dirt and fluids from entering wherever possible. The inner elastomeric layer 13 also can be formed over the buttons on a device 19 wherein a user simply presses the exposed inner elastomeric layer 13

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corresponding to the portion of the mobile electronic device input that is desired as illustrated by the button **18** and **26** on FIG. **1**.

FIGS. **7a** and **7b** are perspective views of the present invention depicting the external hard shell layer **12** with cut corners **23** and inner elastomeric layer **13** of the protective carrying case **10** is a resting, securing position **24** and in an expanded, device insertion position **25**.

It is appreciated that the optimum dimensional relationships for the parts of the invention, to include variation in size, materials, shape, form, function, and manner of operation, assembly and use, are deemed readily apparent and obvious to one of ordinary skill in the art, and all equivalent relationships to those illustrated in the drawings and described in the above description are intended to be encompassed by the present invention.

Furthermore, other areas of art may benefit from this method and adjustments to the design are anticipated. Thus, the scope of the invention should be determined by the appended claims and their legal equivalents, rather than by the examples given.

The invention claimed is:

1. A protective case for a handheld mobile electronic device comprising:

a first portion creating an exterior hard shell, including a fitted cavity formed therein for mounting a handheld mobile electronic device to the protective case, the fitted cavity having a bottom surface for mounting to the mobile electronic device parallel to the back of the mobile electronic device and a plurality of side surfaces extending substantially perpendicular away from the bottom surface for mounting to the mobile electronic device along at least a portion of respective side edges of the mobile electronic device; and

a second portion, permanently affixed to the fitted cavity formed therein of the first portion to create a one-piece assembly,

said second portion comprising an elastomeric liner formed and permanently affixed on the interior of the exterior hard shell first portion, wherein the second portion is co-molded with the first portion and wherein the second portion is permanently affixed along a substantial portion of the bottom surface of the cavity and along substantial portions of each of the side surfaces of the cavity, wherein the co-molded one-piece assembly is sufficiently flexible to deform and thereby accept inser-

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tion of the handheld mobile electronic device and sufficiently rigid to reform around and securely retain the inserted handheld mobile electronic device.

2. The device as described in claim **1** wherein, the second portion further comprises a detent for mounting a handheld mobile electronic device to the protective case.

3. The device as described in claim **2** wherein, said detent on the second portion runs the length of the fitted cavity formed by the first portion.

4. The device as described in claim **1** wherein, the second portion further comprises large elastomeric overhang on one side of the fitted cavity for securing a handheld mobile electronic device to the protective case.

5. The device as described in claim **1** wherein, the second portion further comprises large elastomeric overhang on one or more sides of the fitted cavity for securing a handheld mobile electronic device to the protective case.

6. The device as described in claim **1** wherein, a plurality of regions of the hard shell first portion are cut open; and the elastomeric material of the second portion fills in the gaps created at the plurality of open regions of the exterior hard shell first portion.

7. The device as described in claim **6** wherein one of the open regions of the exterior hard shell is located to correspond to a control bottom of the portable electronic device and wherein the elastomeric material of the second portion filling the gap is formed over said control button.

8. The device as described in claim **7**, wherein the open region corresponding to the control button creates an expandable section that is sufficiently flexible to enable the co-molded one-piece assembly to deform and thereby accept insertion of the mobile electronic device.

9. The device as described in claim **1** wherein, the exterior hard shell first portion is formed to fit the device closely with a small offset from the devices surface.

10. The device as described in claim **1** wherein, the exterior hard shell first portion raps around the edges of the device.

11. The device as described in claim **1** wherein, the protective case has a window for providing exposure to at least a portion of one surface of the associated segment of the handheld mobile electronic device.

12. The device as described in claim **1** wherein, said protective case has at least one access port to allow access to functions found on the handheld mobile electronic device.

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